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Duration estimation of writing: The influence of emotionality on subjective time

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Abstract

Time is a basic, compelling, and universal parameter of human life and activity. The concept of time includes two fundamental subcategories: experiential time (our experience of the duration of events) and logical time (time as a dimension that can be reasoned about; Siegler, 1991). Experiential time, reflecting subjective estimations, may be accurate or inaccurate (contracted or expanded) in relation to real/objective time (i.e., as measured by a clock), called, in this case, *subjective time*. Subjective time is affected by emotionality: emotions generated in conditions of anticipation, pain, ordeal or fear may evoke the feeling that time lags behind. Henceforth, the term *subjectivisation* will be used to refer to the distortion of time estimation caused by, among other possible factors, the emotional content of information (either pleasant or unpleasant).

This study examined subjective time during autobiographical writing process. The question regarding whether writers' time estimation is influenced by their emotionality is an important one, both theoretically and practically. Theoretically, it would shed light on the phenomenon of time subjectivisation. We already know that film-watchers (de Wied, Tan, & Frijda, 1992) and readers (Samartzi, Kazi, & Koustoumbardis, 2011) are losing track of time during pleasant and unpleasant activities, but until now, nothing is known on whether this phenomenon also applies during writing. Practically, showing that writing is an activity amenable to time distortion would be very useful to any educational setting, where students are required to deliver a written text under constraints of number of words and content, and more importantly, time.

It is noted that any autobiographical writing task about a past event interacts with the retrieval of this event from memory. For this reason, we experimentally manipulated the duration of the retrieved event. Specifically, we asked participants to write about their most pleasant and unpleasant *hour* of their life, or *day* of their life, or *vacation* of their life. Holding constant (a) the emotional valence of the memory (most pleasant and most unpleasant), and (b) the length of the written passage (one page) made it plausible to control for the effect of the retrieved event's duration on the estimation of the writing activity as a function of its emotional valence.

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This study involved a sample of 205 (109 females), university students, aged 18 to 21. Participants were presented with a 15-item self-reported Emotionality Inventory, consisting of three subscales: Positive Emotions (pleasure, joy, optimism, relaxation, and light-heartedness), Negative (feeling burdened, sadness, anxiety, displeasure, and pessimism), and Flat (monotony, indifference, neutrality, apathy, and vapidness). Emotions appeared in random order. Participants were asked to report the degree to which each emotion was evoked, on a seven-point Likert-type scale (with 1 corresponding to 'not at all' and 7 to 'absolutely'). Participants were randomly placed in three experimental conditions. In the first condition, participants were asked to write about their most pleasant and unpleasant *hour* of their lives so far (N=59), in the second about their most pleasant and unpleasant *day* (N=61), and in the third condition about their most pleasant and unpleasant *vacations* (N=85). After signing an informed-consent form, the experimenter asked participants to write about their most pleasant (or unpleasant-the order was presented randomly across participants) day, hour or vacation of their life (depending on the experimental condition). They were given 2 min to think about it, and the experimenter signalled the beginning of the writing activity. When notified by the participant, the experimenter posed the following question: "When you started writing, the time was ... (stating the exact time, in hours and minutes, that the participant had started writing). What time do you think it is now?" All of the participants reported duration to the nearest minute (e.g., "Now it is 11:08"). None of the participants were able to report the actual duration (i.e., no clock was on sight in the experimental room), or had any difficulty in writing down their memories. Then, participants were given the self-reported emotionality inventory and the procedure was replicated in exactly the same way for the second text (either pleasant or unpleasant).

Results of multivariate analysis of variance showed that participants reported strong positive emotions and weak negative ones after writing a text about a pleasant memory, and vice versa, they reported strong negative emotions and weak positive ones after writing a text about an unpleasant memory [$F(2,192)=537.850$, $p<.001$, $\eta^2=.849$]. In other words, it was clear that the emotional state of the writer was clearly influenced by the experimental manipulation. To specify whether the estimated duration of writing, in comparison to its actual duration, was affected by emotionality, the following transformation was applied to the raw data: (estimated duration – actual duration)/actual duration, termed as *mean relative time estimation*. Results showed that participants overestimated the duration of writing about their unpleasant memory, whereas they were fairly accurate when estimating the duration of writing about their pleasant activity, across all three autobiographical texts [$F(1,193)=128.654$, $p<.001$, $\eta^2=.400$]. In order to check whether the estimation of the writing activity was influenced by the intensity of participants' emotions, the same analysis was rerun, with the positive emotions after writing the pleasant text and the negative emotions after writing the unpleasant text as covariates. Results of the analysis showed that the effect of the text was no longer significant.

Results of this study revealed that writing texts of different emotional valence affected writers' duration estimations of their writing activity. Specifically, the unpleasant writing activity was estimated by writers to endure longer than its actual duration. On the contrary, the duration of writing a pleasant text by the same writers was rather accurately estimated. Thus, in the case of writing an unpleasant text, emotionality seemed to lead to time subjectivisation, partially confirming our initial hypothesis and in accordance to previous studies (Angrilli, Cherubini, Pavese, & Manfredini, 1997). Additionally, the role of emotionality was further validated by the finding that, entering the emotionality as covariate, led to a non-significant effect of the text valence (pleasant/unpleasant).

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Keywords: Logical time; Experiential time; Subjective time; Emotionality; Writing;

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